



## Discussion

### *Illegal kills of protected wolves call for public reasoning*

Sonne, Christian; Hansen, Hans Peter; Alstrup, Aage K.O.; Olsen, Kent; Jensen, Trine Hammer; Haugaard, Lars; Sunde, Peter

*Published in:*  
Science of the Total Environment

*DOI (link to publication from Publisher):*  
[10.1016/j.scitotenv.2019.01.432](https://doi.org/10.1016/j.scitotenv.2019.01.432)

*Creative Commons License*  
CC BY-NC-ND 4.0

*Publication date:*  
2019

*Document Version*  
Accepted author manuscript, peer reviewed version

[Link to publication from Aalborg University](#)

*Citation for published version (APA):*  
Sonne, C., Hansen, H. P., Alstrup, A. K. O., Olsen, K., Jensen, T. H., Haugaard, L., & Sunde, P. (2019). Discussion: Illegal kills of protected wolves call for public reasoning. *Science of the Total Environment*, 665, 617-619. <https://doi.org/10.1016/j.scitotenv.2019.01.432>

## General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal -

## Take down policy

If you believe that this document breaches copyright please contact us at [vbn@aub.aau.dk](mailto:vbn@aub.aau.dk) providing details, and we will remove access to the work immediately and investigate your claim.

## Accepted Manuscript

Discussion: Illegal kills of protected wolves call for public reasoning

Christian Sonne, Hans Peter Hansen, Aage K.O. Alstrup, Kent Olsen, Trine Hammer Jensen, Lars Haugaard, Peter Sunde



PII: S0048-9697(19)30239-6  
DOI: <https://doi.org/10.1016/j.scitotenv.2019.01.432>  
Reference: STOTEN 30914  
To appear in: *Science of the Total Environment*  
Received date: 8 November 2018  
Revised date: 14 January 2019  
Accepted date: 17 January 2019

Please cite this article as: C. Sonne, H.P. Hansen, A.K.O. Alstrup, et al., Discussion: Illegal kills of protected wolves call for public reasoning, *Science of the Total Environment*, <https://doi.org/10.1016/j.scitotenv.2019.01.432>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

**Discussion: Illegal kills of protected wolves call for public reasoning**

Christian Sonne<sup>1,\*</sup>, Hans Peter Hansen<sup>2</sup>, Aage K. O. Alstrup<sup>3</sup>, Kent Olsen<sup>4</sup>, Trine Hammer Jensen<sup>5,6</sup>, Lars Haugaard<sup>2</sup>, Peter Sunde<sup>2</sup>

<sup>1</sup> Aarhus University, Department of Bioscience, Arctic Research Centre (ARC), Frederiksborgvej 399, POBox 358, DK-4000 Roskilde, Denmark ([cs@bios.au.dk](mailto:cs@bios.au.dk))

<sup>2</sup> Aarhus University, Department of Bioscience, Grenåvej 14, DK-8410 Rønne, Denmark (HP Hansen: [hph@bios.au.dk](mailto:hph@bios.au.dk); L Haugaard: [laha@bios.au.dk](mailto:laha@bios.au.dk); P Sunde: [psu@bios.au.dk](mailto:psu@bios.au.dk))

<sup>3</sup> Aarhus University, Department of Nuclear Medicine and PET Center, Nørrebrogade 44, 10C, DK-8000 Aarhus C, Denmark ([aagealst@rm.dk](mailto:aagealst@rm.dk))

<sup>4</sup> Natural History Museum Aarhus, Wilhelm Meyers Allé 10, DK-8000 Aarhus C, Denmark ([kent@nathist.dk](mailto:kent@nathist.dk))

<sup>5</sup> Aalborg University, Department of Chemistry and Bioscience, Fredrik Bajers Vej 7H, DK-9220 Aalborg, Denmark ([trine@bio.aau.dk](mailto:trine@bio.aau.dk))

<sup>6</sup> Aalborg Zoo, Mølleparkvej 63, DK-9000 Aalborg, Denmark ([thj@aalborgzoo.dk](mailto:thj@aalborgzoo.dk))

\* Corresponding author. Email: [cs@bios.au.dk](mailto:cs@bios.au.dk).

**Key words:** *Canis lupus*; Environment; EU Habitat Directive; European Governments; IUCN Red List; Policy.

Illegal killing of protected species represent a challenge to nature conservation policies. Not only because of the mere loss of individuals of critical importance for the conservation status of the populations the policies are aimed to protect, but also because the crime in itself undermine the authority of the institutional and legal framework fabric in place. Even more

critically, if illegal killings directly or indirectly find moral support by larger groups in society, the existing wildlife management regimes will start to lose their legitimacy (Pohja-Mykrä and Kurki 2014).

Illegal killing of wolves (*Canis lupus*) is a widespread and well-known phenomenon in most existing wolf-habitats around the world. Studies attribute illegal killing to be the most significant factor when it comes to human caused mortality of wolf populations in the western world (e.g. Liberg et al. 2012; Suutarinen and Kojola 2017; Treves et al. 2017). Depending on the spatial scale and geography, the calculated mortality among wolves caused by illegal killing vary. In Wisconsin for example, the mortality rate was estimated to be 39-45% during the years 1979-2012 (Treves et al. 2017a). On top of this, it has been argued that illegal killing of wolves is underestimated by science (Treves et al. 2017b).

The focus on illegal killing of wolves have primarily been on population-effects (e.g. Recio et al. 2018; Suutarinen and Kojola 2018). However, studies have also looked into cultural dimensions and institutional structures in play (Andreassen et al. 2018; Lundmark et al. 2018; Krange and Skogen 2011; Skogen and Thrane 2007). Recognizing that illegal killing of wolves is difficult to prevent by traditional means of information and law enforcement, various economic compensation schemes have been developed. For example, countries like Sweden and Finland have experimented with stronger stakeholder representation within the institutional structures (Bisi et al. 2017; Hansen et al. 2016; Skogen 2015; Lundmark and Matti 2015; Treves et al. 2009). This in order to increase not only the legal, but also the sociopolitical legitimacy of existing wolf management regimes.

So far, the various studies and changes of institutional structures have had little impact. Our main argument in this Discussion paper is that the natural dimensions of a still more radicalized response to wildlife management cannot be separated from the cultural and sociopolitical aspects, and vice versa. Using Denmark as example, we will show how the

wolf context and illegal killing of wolves represent the relationship between science and society.

Denmark is known to be a well-organised democratic society and a frontier country in the international endeavour for the environment. Being recognized as one of the most environmentally friendly countries in the world, Denmark face the same difficulties to protect its few grey wolves, which comprise the northernmost part of the Central European lowland population, as other countries with a much longer and more consistent wolf history (Biswas-Diener et al. 2010; Sonne and Alstrup 2018). After its extinction from Denmark in the early 19<sup>th</sup> century (last specimen shot in 1813), this long-distance dispersing species have recolonised Denmark from Germany and Poland with the first verified observation in November 2012 (Sunde and Olsen 2018). Since 2012, at least eight immigrants have been documented and the first (and so far only) pair gave birth to minimum eight pups in 2017 (Sunde and Olsen 2018). The species is strictly protected under the EU Habitats Directive (Council Directive 92 / 43 / EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora). It is therefore prohibited to hunt, disturb and prevent the local and regional expansion of this growing, but still vulnerable subpopulation (EU 2016).

One-and-a-half year after the first wolf was verified, the Danish Nature Agency implemented a wolf management plan that had full political support in the Danish Wildlife Management Board (DWMB). The DWMB is an official advisory panel for the Minister of the Environment comprised by all major stakeholder organisations with interests in Wildlife Management: Hunters, farmers, land owners, nature protection associations etc. (Miljøministeriet 2014). The plan provided full economic compensation for livestock assumed killed by wolves and subsidies for prevention means (e.g. wolf proof electric fences) in areas with permanent wolf presence. It explicitly addressed culling of problem-individuals as a management option, i.e. all three types of management tools disposable for management authorities to reduce large carnivore conflicts in Europe (livestock protection,

economical compensation and lethal control: Linnell and Cretois, 2018). The plan also cleared states that authorities only can decide when lethal control should be used as action, including removal of hybrids.

In the years 2012-16, compensations were paid for averagely 10 sheep per year with a per capita kill rate (5 kills wolf<sup>-1</sup> year<sup>-1</sup>) equalling the median for EU countries hosting wolves (Linnell and Cretois 2018). To date there have been no documented incidence of wolves in Denmark behaving aggressively or unfearfully to humans, nor have there been any documented attacks on livestock grazing inside intact and correctly built ‘wolf-proof’ electric fences (albeit there have been several wolf attacks when ‘wolf-proof’ fences have been either mal-constructed, damaged or without electricity).

A heated and still more irreconcilable public debate has played out in Danish public and social media for the last six years among wolf supporters, wolf opponents, fearful citizens, farmers, hunters and politicians. This has happened despite a strong legal protection, modest livestock depredation levels compared to other EU countries and a management plan that addresses how problems should be dealt with and compensated. It has occurred especially so since late 2017 following consecutive attacks on sheep grazing within the territory of the breeding pair. Although researchers have been active to inform with facts, this has not been sufficient to keep the debate from escalating.

Concurrently with the heated debate, the possibility of illegal killings has been addressed albeit not substantiated by hard evidence. The first four immigrants to Denmark (2012-15) that did not die of natural reasons had all disappeared by the end of 2017 (Sunde and Olsen 2018). Through all years, rumours and claims have been circulating that wolves are shot illegally, and April 16 2018 the illegal killing of a young female wolf was caught on footage in Ulfborg, Jutland (Sonne and Alstrup 2018; The Guardian 2018). The wolf (identified as one of at least six pups from the 2017-litter, surviving to 2018) was shot by a local landowner holding an MSc in Forest and Nature Management.

In court, the legal defence of the landowner claimed the wolf behaved unfearful to humans; and was shot as an act of self-defence. The footage of the wolf's behaviour before it was shot gave no support for that claim according to internationally reputed wolf experts consulted on this question. The landowner further justified his action as an altruistic effort for the local community because he had the opportunity to intervene in a situation where authorities had failed. On behalf of the landowner, the defence further questioned that the shot animal was a genuine wolf and not a hybrid of wolf  $\times$  dog as proposed should be the case with all apparent wolves in Denmark (TV2 2019).

In reality, the 13 wolves from Denmark that so far have been genotyped, have all been demonstrated to be part of the so-called Central European Lowland population (Sunde and Olsen 2018; Olsen et al. 2018) established in the late 1990ies by immigrants from the Baltic population (Chapron et al. 2014). The Central European lowland population has been one of the most closely genetically monitored wolf populations in the World (Czarnomska et al. 2013). To illustrate this, the shot specimen's pedigree tree was mapped three generations back (Olsen et al. 2018).

The illegal killing illuminate dynamics of dissent and vigilantism including the role of public media and politicians. In the Danish situation, prominent politicians and other opinion formers have publically questioned the legitimacy of the present wolf management regime by unsubstantiated claims. For example, MPs (Member of Parliament), including a former Minister of Defence has in several interviews questioned if wolves made it into Denmark without the support of humans (Radio24Syv 2018; EkstraBladet 2013). At a public meeting in the local area of the wolf pack on April 9 2018, Denmark's at the time minister of the environment juxtaposed the narrative that the wolves illegally were brought into the country, with the scientific explanation (Hansen, 2018).

Further, in the wake of the illegal kill April 16 2018, prominent opinion formers, including MPs and former Secretary of Foreign affairs, indirectly justified vigilantism which

made the Danish National Wildlife Council publically expressed concerns against such justifications by local as well as national politician (Miljøstyrelsen 2018; Altinget 2018).

The wolf context in general and illegal killing in particular exceeds its own context. As illustrated by the Danish case it represent a trajectory of political populism at the expense of modern democratic principles of reasoning based on deliberation and knowledge. The case demonstrate the acceptance of political disagreements to be excluded from the traditional democratic procedures by systematically distorted communication, ‘myths’, ‘fake news’, ‘barstool biology’ and growing distrust towards science and researchers (Habermas 1998; von Essen 2017). Communicative distortion is reinforced by social media and various internet forums functioning as echo chambers for reproduction of distrust (Williams et al. 2015). Based on the experiences from Scandinavia we will argue, a kind of public despair and fatigue have emerged in relation to the wolf-issue, also within the scientific community, and locally there is an almost non-existing social control and self-policing on illegal killing of wolves (Peterson et al. 2018; von Essen and Hansen 2018).

Opinion formers and public media obviously hold a strong responsibility to uphold reason and keep public deliberation on track while the scientific community also have to reflect on its responsibility. As mentioned in the introduction the first step is to recognise that science is not performed in an isolated space, but in a living world in all its complexity. Secondly, we have to keep in mind the historical lesson that reason separated from the everyday of life of people often leave the floor to populism with all its totalitarian consequences (Jay 2016).

With this in mind the described Danish wolf case become a representation of a much bigger socio-political issue and the question is then, how the scientific community can contribute to a better integration of the everyday life of people and the production of scientific knowledge. Not by giving in to myth and problems of fear and conflicting interests and perceptions of nature, nor by patronizing citizens, but by confronting these up front by



1) the means of facts and reasoning, and 2) by the exploration of possible solutions to an apparent dystopic situation by scientific methods. In case of the wolf-issue, this ought to be solvable with a combined natural and social scientific effort. However, it require researchers to interact and include also with those parts of society who experience themselves to be excluded or marginalised from processes of decision-making and Modern knowledge production.

## References

- Altinget 2018. Lundes ulve-rådgivere: Politikere skal stoppe med at opfordre til selvtægt, 24. april 2018. URL: <https://www.altinget.dk/artikel/lundes-ulve-raadgivere-politikere-skal-stoppe-med-at-opfordre-til-selvtægt>.
- Andreassen HP, Gangaas KE, Kaltenborn BP. 2018. Matching social-ecological systems by understanding the spatial scale of environmental attitudes. *Nat Conserv* 30:69-81.
- Bisi J, Kurki S, Svensberg M, Liukkonen, T. 2007. Human dimensions of wolf (*Canis lupus*) conflicts in Finland. *European Journal of Wildlife Research*. 53:304-314. Springer.
- Biswas-Diener R, Vittersø J, Diener E. 2010. The Danish effect: beginning to explain high well-being in Denmark. *Soc Indic Res* 97:229-246.
- Chapron C, Chapron G, Kaczensky P, Linnell JD, von Arx M, Huber D, Andrén H, Boitani L. 2014. Recovery of large carnivores in Europe's modern human-dominated landscapes. *Science* 346:1517-1519.
- Czarnomska DS, Jędrzejewska B, Borowik T, Niedziałkowska M, Stronen AV, Nowak S, Mysławek RW, Okarma H, Konopiński M, Pilot M, Śmietana W, Caniglia R, Fabbri E, Randi E, Pertoldi C, Jędrzejewski W. 2013. Concordant mitochondrial and microsatellite DNA structuring between Polish lowland and Carpathian Mountain wolves. *Conserv Gen* 14:573-588.

- EkstraBladet. 2013. Ekspert: Ulvene kom ikke fra Tyskland. URL:  
<https://ekstrabladet.dk/nyheder/samfund/article4506380.ece>.
- EU. 2016. The Habitats Directive. URL:  
[http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index\\_en.htm](http://ec.europa.eu/environment/nature/legislation/habitatsdirective/index_en.htm).
- Habermas J. 1998. Between facts and norms: contributions to a discourse theory of law and democracy. Rans William Rehg, Cambridge, MIT Press.
- Hansen HP, von Essen E, Sriskandarajah N. 2016: Citizens, Values and Experts: Stakeholders and The Inveigling Factor of Participatory Democracy, in Hansen, H. P. Nielsen, B. S.; Sriskandarajah N, Gunnarsson E. (eds) Commons, Sustainability, Democratization: Action research and the Basic Renewal of Society, Routledge. ISBN 978-1-138-12477-6.
- Hansen HP. 2018. Personal notes from public meeting, Landsby Center Vind, April 9 2018.
- Jau M. 2016. Reason after its eclipse: on late critical theory, University of Wisconsin Press.
- Krange O, Skogen K. 2011. When the lads go hunting: The ‘Hammertown mechanism’ and the conflict over wolves in Norway. *Ethnography* 12:466–489.
- Liberg O, Chapron G, Wabakken P, Pedersen HC, Hobbs NT, Sand H. 2012. Shoot, shovel and shut up: cryptic poaching slows restoration of a large carnivore in Europe. *Proc R Soc Biol* 279:910-915.
- Linnell JDC, Cretois B. 2018. Research for AGRI Committee – The revival of wolves and other large predators and its impact on farmers and their livelihood in rural regions of Europe, European Parliament, Policy Department for Structural and Cohesion Policies, Brussels URL:  
[http://www.europarl.europa.eu/RegData/etudes/STUD/2018/617488/IPOL\\_STU\(2018\)617488\\_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2018/617488/IPOL_STU(2018)617488_EN.pdf)

- Lundmark C, Matti S, Sandström A. 2018. The transforming capacity of collaborative institutions: Belief change and coalition reformation in conflicted wildlife management. *J Environ Manage* 226:226-240.
- Lundmark C, Matti S. 2015 Exploring the prospects for deliberative practices as a conflict-reducing and legitimacy-enhancing tool: the case of Swedish carnivore management *Wildlife Biology* 21(3):147-156. 2015.
- Miljøministeriet (Danish Ministry for Protection of the Environment) 2014. Forvaltningsplan for ulv i Danmark. URL: [https://mst.dk/media/118297/forvaltningsplan\\_ulv.pdf](https://mst.dk/media/118297/forvaltningsplan_ulv.pdf)
- Miljøstyrelsen (The Danish Environmental Protection Agency) 2018. Referat af møde i Vildtforvaltningsrådet onsdag den 21. Marts. Ministry of Environment and Food of Denmark.
- OECD 2015. In it together: why less inequality benefits all. OECD Publishing. URL: <http://www.oecd.org/social/in-it-together-why-less-inequality-benefits-all-9789264235120-en.htm>.
- Olsen K, Sunde P, Hansen MM, Thomsen PF. 2018. Statusrapport fra den nationale overvågning af ulv (*Canis lupus*) i Danmark - 2. kvartal 2018. (Notat fra DCE - Nationalt Center for Miljø og Energi & Naturhistorisk Museum Aarhus). URL: [http://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Notater\\_2018/Statusrapport\\_ulv\\_2kvar\\_2018.pdf](http://dce.au.dk/fileadmin/dce.au.dk/Udgivelser/Notater_2018/Statusrapport_ulv_2kvar_2018.pdf).
- Peterson MN, von Essen E, Hansen HP, Peterson TR. 2018. Shoot shovel and sanction yourself: Self-policing as a response to wolf poaching among Swedish hunters. *Ambio* DOI 10.1007/s13280-018-1072-5.
- Pohja-Mykrä M, Kurki S. 2014. Strong community support for illegal killing challenges wolf management. *Eur J Wildlife Res* 60:759-770.

- Radio24Syv. 2018. Søren Gade vil finde ud af om ulven er blevet placeret i Danmark. URL: <https://www.radio24syv.dk/udvalgte-nyhedshistorier/soeren-gade-vil-finde-ud-af-om-ulven-er-blevet-placeret-i-danmark>.
- Recio MR Zimmermann B, Wikenros C, Zetterberg A, Wabakken P, Sand H. 2018. Integrated spatially-explicit models predict pervasive risks to recolonizing wolves in Scandinavia from human-driven mortality. *Biol Conserv* 226:111-119.
- Sciencenordic. 2018. Wolves endangered by illegal hunting. <http://sciencenordic.com/wolves-endangered-illegal-hunt>.
- Skogen K. 2015. The persistence of an economic paradigm: unintended consequences in norwegian wolf management. *Hum Dim Wildlife* 20:317-322.
- Skogen K, Thrane C. 2007. Wolves in context: using survey data to situate attitudes within a wider cultural framework. *Soc Nat Res* 21:17-33.
- Sonne C, Alstrup AKO. 2018. One wolf shot is too many. *Nature* 558:519.
- Sunde P, Olsen K. 2018. Ulve (*Canis lupus*) i Danmark 2012-2017. Oversigt og analyse af tilgængelig bestandsinformation [Extended English summary: Wolves (*Canis lupus*) in Denmark 2012-2017]. Aarhus Universitet, DCE – Nationalt Center for Miljø og Energi, 52 s. - Videnskabelig rapport fra DCE - Nationalt Center for Miljø og Energi nr. 258. URL: <http://dce2.au.dk/pub/SR258.pdf>.
- Suutarinen J, Kojola I. 2017 Poaching regulates the legally hunted wolf population in Finland. *Biol Conserv* 215:11-18.
- Suutarinen J, Kojola I. 2018. One way or another: predictors of wolf poaching in a legally harvested wolf population. *Anim Conserv* 21:414-422.
- The Guardian. 2018. Wild wolf shot and killed in Denmark. URL: <https://www.theguardian.com/environment/2018/may/01/wild-wolf-shot-and-killed-in-denmark>.

- Treves A, Jurewicz RL, Naughton-Treves L, Wilcove DS. 2009. The price of tolerance: wolf damage payments after recovery. *Biodiv Conserv* 18:4003-4021.
- Treves A, Langenberg JA, Lopez-Bao JV, Rabenhorst MF. 2017a. Gray wolf mortality patterns in Wisconsin from 1979 to 2012. *J Mammal* 98:17-32.
- Treves A, Artelle KA, Darimont CT, Parsons DR. 2017b. Mismeasured mortality: correcting estimates of wolf poaching in the United States. *J Mammal* 98:1256-1264.
- TV2. 2019. Advokat mener, dræbt ulv kan være hybrid og kræver ny DNA-prøve URL: <http://nyheder.tv2.dk/samfund/2019-01-08-advokat-mener-draebt-ulv-kan-vaere-hybrid-og-kraever-ny-dna-proeve>
- von Essen E, Hansen HP, Nordström Källström H, Peterson MN, Peterson T. 2015. The radicalization of rural resistance: how hunting counterpublics in the Nordic countries contribute to illegal hunting. *J Rural Studies* 39:199-209.
- von Essen E, Hansen HP. 2018. Policing peers and selves between law and morality: a socio-legal perspective on managing misconduct in hunting. *Int J Rural Crim* 4:1-26.
- von Essen E. 2017. Whose discourse is it anyway? Understanding resistance through the rise of “barstool biology” in nature conservation. *Environ Comm* 11:470-489.
- Williams HTP, McMurray JR, Kurz T, Lambert FH. 2015. Network analysis reveals open forums and echo chambers in social media discussions of climate change. *Global Environ Change* 32:126-138.

**Highlights**

- Illegal wolf kills happens around in Europe.
- The European wolf is is protected under the EU Habitats Directive.
- Fake news and social media accelerate the local conflicts.
- This call for political accountability and a sufficient management.
- European governments should integrate facts and values not separate them.

ACCEPTED MANUSCRIPT